

17 JUN 2005  
139,710

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
1 July 2004 (01.07.2004)

PCT

(10) International Publication Number  
**WO 2004/056125 A1**

(51) International Patent Classification<sup>7</sup>: **H04N 7/36, 7/26**

(21) International Application Number:  
PCT/GB2003/005526

(22) International Filing Date:  
16 December 2003 (16.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
0229354.6 18 December 2002 (18.12.2002) GB

(71) Applicant (for all designated States except US): **THE ROBERT GORDON UNIVERSITY** [GB/GB]; Schoolhill, Aberdeen AB10 1FR (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **RICHARDSON, Iain** [GB/GB]; "Solas", Middle Cottages, Westerton, Rothienorman, Aberdeenshire AB51 8US (GB). **ZHAO, Yafan** [CN/GB]; 2 School Terrace, Aberdeen AB24 1TW (GB).

(74) Agent: **MURGITROYD & COMPANY**; Scotland House, 165-169 Scotland Street, Glasgow G5 8PL (GB).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

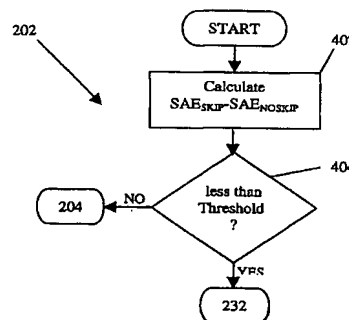
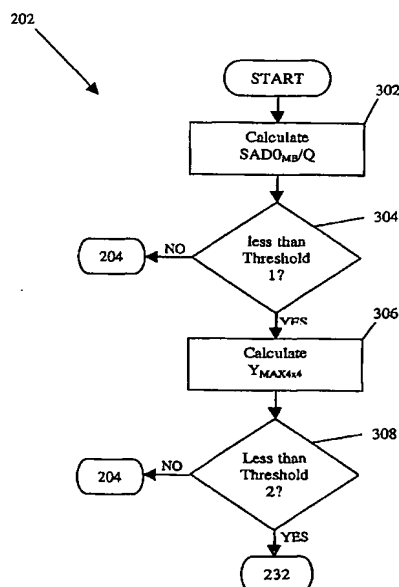
(84) Designated States (*regional*): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: VIDEO ENCODING WITH SKIPPING MOTION ESTIMATION FOR SELECTED MACROBLOCKS



(57) Abstract: The computational complexity of video encoding is reduced by taking the decision whether to encode a region of a video frame or to skip the encoding prior to calculating whether any motion has occurred in respect of the same region in the previous frame. In one embodiment, the decision on whether to skip the encoding of a region is based on an estimate of the energy of pixel values in the region and/or an estimate of discrete cosine transform coefficients. In a further embodiment, the decision is based on an estimate of the distortion likely to occur if the region is not encoded.

WO 2004/056125 A1

# INTERNATIONAL SEARCH REPORT

National Application No

PCT/GB 03/05526

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 H04N7/36 H04N7/26

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 192 148 B1 (LIN REHN-LIEH) 20 February 2001 (2001-02-20) cited in the application	1,3-7, 11,16,17
Y	abstract column 4, line 33 - line 34 column 4, line 66 - column 5, line 15 column 5, line 25 - line 28 column 6, line 5 - line 7 column 6, line 52 - line 63	2,8,9,12
A	figure 2	10,13-15
Y	US 2002/106021 A1 (CHEN CHIN-YUN ET AL) 8 August 2002 (2002-08-08)	2,8,9
A	abstract paragraphs '0009!-'0011!, '0024!, '0025!, '0027!, '0029! figures 2,3	10
	--- -/-	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*Z\* document member of the same patent family

Date of the actual completion of the international search

8 April 2004

Date of mailing of the international search report

22/04/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Sampels, M

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 03/05526

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>YANG J-F ET AL: "COMPUTATION REDUCTION FOR MOTION SEARCH IN LOW RATE VIDEO CODERS"</p> <p>IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS FOR VIDEO TECHNOLOGY, IEEE INC. NEW YORK, US,</p> <p>vol. 12, no. 10, October 2002 (2002-10), pages 948-951, XP001133426</p> <p>ISSN: 1051-8215</p>	12
A	<p>abstract</p> <p>page 948, left-hand column, line 40 - line 42</p> <p>page 948, right-hand column, line 17 - line 34</p> <p>page 950, left-hand column, line 1 - right-hand column, line 18</p>	13-15

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 03/05526

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
US 6192148	B1	20-02-2001	TW	508908 B	01-11-2002
US 2002106021	A1	08-08-2002	TW	484327 B	21-04-2002
			JP	2002218475 A	02-08-2002